

Biomedical Discussion Group

Interpretable and Collaborative Deep Learning for Low-level Computer Vision

Monday December 3, 2018

11 am - 12 pm, East Campus 4 Boardroom (EC4-2101a)



Dr. Xin Fan

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Abstract: Model optimization plays the key role in many learning and vision tasks. However, designing numerical schemes always need high mathematical skills and rich domain knowledge. Moreover, it is always challenging to apply the generally designed iterations in specific real-world scenarios. In this talk, we introduce a series of paradigms to design task-specific optimization schemes based on inexact learnable architectures. The theoretical properties of these deeply trained propagations are carefully investigated. We demonstrate that we actually provide a new way to establish interpretable and collaborative deep learning models for different real-world applications. Comparisons to adversarial mechanisms in GAN will also be covered. Finally, we demonstrate how to apply the proposed framework to various low-level computer vision tasks including image deblurring, dehazing, and MRI image reconstruction.

Bio: Dr. Xin Fan is currently Professor of Dalian University of Technology, and Dean of International School of DUT-RU Information Science and Engineering. He received the B.E. and Ph.D. degrees in information and communication engineering from Xi'an Jiaotong University, Xi'an, China, in 1998 and 2004, respectively. He was with Oklahoma State University, Stillwater, from 2006 to 2007, as a post-doctoral research Fellow. In 2008, he was with the Southwestern Medical Center, University of Texas, Dallas, for the second postdoctoral training. He joined the School of Software, Dalian University of Technology, in 2009.

His current research interests include computational geometry and machine learning, and their applications to image processing and analysis. He has published over 100 papers in top journals and conferences including IEEE TIP, TMM, NIPS, ICCV, ECCV, ACM MM, AAAI and IJCAI. He has been the PI of four grants from NSF of China including one key project on underwater robots. He won the best student paper award at ICME2015 as the corresponding author and was among the shortlist of the best paper awards at ICIP2013, ICIP2015 and ICME2017.

Keywords: machine learning, deep learning, imaging, image processing and analysis, computational geometry

Coffee and Timbits available - RSVP via Eventbrite is required



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